

WHAT IS CLAIMED IS:

1. A semiconductor manufacturing method which performs reactive gas processing, the reactive gas being fed into a reaction chamber, into which a substrate is placed, and
5 reacting with the substrate, the method comprising the steps of:

measuring the moisture content in said reaction chamber having said substrate provided therein, or in a gas discharge
10 system of said reaction chamber; and
adjusting conditions for processing the reactive gas based on the moisture content.

2. The semiconductor manufacturing method according to claim
15 1, said conditions for processing the reactive gas comprising conditions for heating said substrate prior to feeding the reactive gas into said reaction chamber.

3. The semiconductor manufacturing method according to claim
20 2, said conditions for heating comprising at least one of the heating temperature of the substrate, the heating time of the substrate, and the amount of purge gas.

4. The semiconductor manufacturing method according to claim
25 1, said conditions for processing said reactive gas comprising at least one of the heating temperature of the substrate, the amount of said reactive gas, the mixture ratio of said

reactive gas, and the pressure inside said reaction chamber.

5. The semiconductor manufacturing method according to claim 1, further comprising reactive gas processing of said substrate, which has silicon oxide provided on at least part of its top face.

6. The semiconductor manufacturing method according to claim 5, said substrate comprising a silicon substrate; and said reactive gas processing comprising selectively growing a semiconductor layer in a region on the top face of said substrate where the silicon is exposed.

7. A semiconductor manufacturing method which performs reactive gas processing, wherein, when a substrate carrying system inserts a substrate from an airtight space in the substrate carrying system into a reaction chamber, and when said substrate is ejected from said reaction chamber to said airtight space, reactive gas is fed into said reaction chamber and reacts therein, the method comprising:

a substrate carrying step of measuring the moisture content in said airtight space by means of a first moisture measuring device which is connected to said airtight space, and thereafter, inserting and ejecting said substrate by means of said substrate carrying system; and

a gas processing step of performing said reactive gas

processing while measuring the moisture content in said reaction chamber by means of a second moisture measuring device, which is connected to said reaction chamber, after said substrate carrying step.

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8. The semiconductor manufacturing method according to claim 7, said substrate carrying step comprising inserting said substrate from said airtight space to said reaction chamber or ejecting said substrate from said reaction chamber to said airtight space, after it has been confirmed that the moisture content in said airtight space is lower than a first default value; and

10 said gas processing step being a step in which said reactive gas processing is commenced after it has been confirmed that the moisture content in said reaction chamber is lower than a second default value.

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9. The semiconductor manufacturing method according to claim 8, at least said second default value being lower than 1 ppm.

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10. The semiconductor manufacturing method according to claim 7, at least one of said first moisture measuring device and said second moisture measuring device comprising a laser moisture measuring device which radiates laser light into a tubular cell main body, connected to said airtight space and said reaction chamber, and measures an absorption spectrum of transmitted laser light.

11. A semiconductor manufacturing apparatus for performing reactive gas processing when a substrate carrying system inserts a substrate from an airtight space in the substrate carrying system into a reaction chamber, and when said substrate is ejected from said reaction chamber to said airtight space, the semiconductor manufacturing apparatus feeding reactive gas into said reaction chamber and reacting the reactive gas therein, said apparatus comprising:

a first moisture measuring device which measures the moisture content in said airtight space of said substrate carrying system; and

a second moisture measuring device which measures the moisture content in said reaction chamber.

12. The semiconductor manufacturing apparatus according to claim 11, comprising a plurality of reaction chambers, said first moisture measuring device being capable of measuring the moisture content in each of said reaction chambers.

13. The semiconductor manufacturing apparatus according to claim 12, further comprising a switching unit which can switch an object connected to said first moisture measuring device to any one of said reaction chambers.

14. The semiconductor manufacturing apparatus according to claim 11, said first moisture measuring device and said second

moisture measuring device comprising a single moisture measuring device; the apparatus further comprising

5 a switching unit which can switch an object connected to said moisture measuring device to said airtight space and said reaction chamber.

15. The semiconductor manufacturing apparatus according to claim 11, at least one of said first moisture measuring device and said second moisture measuring device comprising a laser
10 moisture measuring device which radiates laser light into a tubular cell main body, connected to said airtight space and said reaction chamber, and measures the absorption spectrum of transmitted laser light.